Arnold Den
Senior Scientist R-9

ORDAT LANDFILL COMMENTS

1. Some of the samples collected by the contractor did not follow appropriate QA procedures and would cause the loss of VOCs. Previous Guam sampling (see 1988 305 report) documented that leachate flow and well water contained organics. Vinyl chloride, typical hazardous waste landfill degradation products, was detected up to the MCL value.
   - Conclusion can not be made that organics are not in the groundwater or leachate.
2. Greater than 20% of the samples showed Pb values that exceed ODWs forthcoming PMCL value of 5ppb
   - Pb value may exceed public health values.
3. Sampling procedure for the River did not follow standard procedures. Samples (1) are inadequate to make judgements on the River.
   - Impacts of leachate flow and groundwater flow into the river remain to be determined.
4. Sediment samples were not taken from the river. Contact and feeding off sediments is the most important exposure route for ecological risk. Some materials i.e., PCBs, and Dioxins are usually only found in the sediments.
   - Sediment sampling is necessary to make a judgement on on the river.
5. Wells #5 and #6 which are next to the river, appear to be outside of the landfill boundaries. The wells in-

dicate that metals have moved from the landfill and are impacting groundwater. Several of the values exceed ambient fresh fish chronic levels. No EP toxicity or fish bioassay tests conducted.

6. Leachate sample SW10 appears to be located beyond the landfill operation, again confirming metals are moving offsite. Since sampling occurred near the end of the dry season, it is unknown how many leachate flows there are and where they are.

7. No sampling was conducted to characterize the hydrogeology structure and groundwater movement. The landfill appears to have a capacity to store water (leachate flows). What is unknown is whether the leachate flows are entirely from direct infiltration on the landfill or it is a combination of infiltration, runoff from the slopes and groundwater flow from the higher slopes into the landfill. This information is critical to any remediation initiated to manage infiltration and leachate flow.

8. Underground fires have occurred in the landfill. If the fires involved PCBs then Dioxin may be a problem.

9. The endangerment assessment is being prepared after the decision was made that there was no problem with ORDAT.

10 Since leachate flows directly into the river an NPDES permit is required, conformance with NPDES ARARs was not evaluated.

11 Since the leachate contains metals that exceed the freshwater chronic criteria for fish how the leachate be treated/disposed without impacting the river?

12 Volcanic deposits usually have volcanic tubes. Is there any evidence that this situation is not present under the land fill?

SAMPLED BY: G. Pangelinan
V. Eflin

DATE: Aug. 17, 1989

TESTED BY: M. Pador
C. Sian-Denton

DATE: Aug - Sept. 1989

PARAMETERS	SURFACE LIMITS	SURFACE STATIONS PGRL-0	PGRL-1	PGRL-2	PGRP-1	GROUND LIMITS	GROUND A-11
Total Coliform Bacteria	No increase over natural conditions					X	X
D.O.	5.6 (30°C) to 6.2 (26°C) mg/l					X	X
Residue	80 mg/l					X	X
NO_2-N (Nitrites)						X	X
NO_3-N (Nitrates)	0.5 mg/l					X	X
PO_4-P	0.1 mg/l					X	X
						X	X
Turpidity	3 NTU over ambient conditions					X	X
pH	6.4-8.5 Variation: ± 0.5					X	X
Temp (°C)	± 1°C from ambient conditions					X	X
Ammonia Nitrogen						X	X
Total Kjeldahl Nitrogen						X	X
Chlorides						X	X
Specific Conductance						X	X
$CaCO_3$						X	X
Arsenic	.44 mg/l ug/l		2.97		1.36	0.05 mg/l	
Barium	ug/l		32.0		40.0	1.0 mg/l	
Cadmium	.012 mg/l ug/l		0.533		0.800	0.01 mg/l	
Chromium	.021 mg/l ug/l		8.00		11.4	0.05 mg/l	
Cyanide Copper ug/l	8.8 mg/l ug/l		7.27		10.2	~~mg/l~~ mg/l	
Lead	ug/l		8.00		8.00	0.05 mg/l	
Mercury	.0000017 mg/l ug/l		0.235		0.580	0.002 mg/l	
Nitrate (as N)						10.0 mg/l	
Selenium	.26 mg/l		NP		NP	0.01 mg/l	
Silver	ug/l		1.14		1.14	0.05 mg/l	
Endrin	0.00018 mg/l		ND		ND	0.0002 mg/l	
Lindane	0.00001 mg/l		ND		ND	0.004 mg/l	
Methoxychlor	0.00003 mg/l		ND		ND	0.1 mg/l	
Toxaphene	0.0016 mg/l		ND		ND	0.005 mg/l	
2,4-D			ND		ND	0.1 mg/l	
2,4,5-TP Silvex			ND		ND	0.01 mg/l	
Malathion	0.0001 mg/l						
DDT	0.001 mg/l						

NP = Not performed
ND = Not Detected

[illegible] BY: [illegible] Pangelinan
V. [illegible]
DATE: Aug. 18, 1989

TESTED BY: M. Pador
C. Sian-Denton
DATE: Aug-Sept. 1989

PARAMETERS	SURFACE LIMITS	SURFACE STATIONS PGRL-0	PGRL-1	PGRL-2	PGRP-2	GROUND LIMITS	GROUND A>L[illegible]
otal Coliform Bacteria	no increase over natural conditions					X	X
D.O.	5.6 (30°C) to 6.2 (25°C) mg/l					X	X
esidue	80 mg/l					X	X
O_2-N (Nitrites)						X	X
O_3-N (Nitrates)	0.5 mg/l					X	X
O_4-P	0.1 mg/l					X	X
[illegible]						X	X
urbidity	3 NTU over ambient conditions					X	X
H	6.4-8.5 Variation: ± 0.5					X	X
emp (°C)	± 1°C from ambient conditions					X	X
mmonia Nitrogen						X	X
otal Kjeldahl Nitrogen						X	X
hlorides						X	X
pecific Conductance						X	X
$CaCO_3$						X	X
rsenic	.44 mg/l	ug/l 2.23		3.46	4.08	0.05 mg/l	
arium		ug/L 216.0		32.0	24.0	1.0 mg/l	
admium	.012 mg/l	ug/l 0.800		1.53	0.267	0.01 mg/l	
hromium	.021 mg/l	ug/L 8.00		3.72	10.8	0.05 mg/l	
~~Fluoride~~ Copper	~~0.8 mg/l~~	ug/l 16.7		6.55	11.6	~~[illegible] mg/l~~	
ead		ug/l 22.0		8.00	20.0	0.05 mg/l	
ercury	.0000017 mg/l	ug/l 0.330		0.165	0.215	0.002 mg/l	
itrate (as N)						10.0 mg/l	
elenium	.26 mg/l	NP		NP	NP	0.01 mg/l	
ilver		ug/l 2.29		0.571	1.14	0.05 mg/l	
ndrin	0.00018 mg/l	ND		ND	ND	0.0002 mg/l	
indane	0.00001 mg/l	ND		ND	ND	0.004 mg/l	
ethoxychlor	0.00003 mg/l	ND		ND	ND	0.1 mg/l	
oxaphene	0.0016 mg/l	ND		ND	ND	0.005 mg/l	
,4-D		ND		ND	ND	0.1 mg/l	
,4,5-TP Silvex		ND		ND	ND	0.01 mg/l	
alathion	0.0001 mg/l						
DT	0.001 mg/l						

NP = Not performed
ND = Not Detected